

SN 09/995,304
Docket No. S-94,769
In Response to Office Action dated September 12, 2006

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) A process of separating a sample comprising:

attaching a different receptor agent to at least two distinct populations of magnetic microspheres with a specific range of magnetic moments, wherein each of said magnetic microspheres includes a plurality of magnetic particles, and wherein said magnetic particles are either coated, imbedded in said magnetic microspheres, or immobilized on a surface of or within said magnetic microspheres;

combining a target sample with said distinct populations of magnetic microspheres containing the different attached receptor agents together for a period of time sufficient to allow for binding between attached receptor agents and target species within said target sample to form one or more receptor agent-target species complexes; and,

sorting said distinct populations of magnetic microspheres containing the different receptor agent-target species complexes by passing said magnetic microspheres through a first magnetic field provided by a first magnet to a chamber and a collector, wherein the chamber and the collector are disposed in a second magnetic field provided by a second magnet, and wherein said magnetic microspheres having different magnetic moments are separated in the chamber in the presence of the second magnetic field according to trajectories determined by their respective magnetic moments.

2. (Previously presented) The process of claim 1 further including analyzing, for formation of one or more receptor agent-target species complexes within said target sample, each of said sorted distinct populations of magnetic microspheres containing the different attached receptor agents.

3. (Previously presented) The process of claim 1 wherein said distinct populations of magnetic microspheres with a specific range of magnetic moments are obtained from a process comprising forming magnetic microspheres including magnetic particles, said magnetic

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microspheres attachable to a receptor agent; and sorting said magnetic microspheres by passage through a magnetic separator so as to separate said magnetic microspheres into a number of distinct populations of magnetic microspheres, each distinct population with a specific range of magnetic moments.

4. (Previously presented) The process of claim 3 wherein the step of sorting said distinct populations of magnetic microspheres further includes passing said magnetic microspheres through a magnetic field so as to magnetize said magnetic microspheres prior to sorting said distinct populations.

5. (Original) The process of claim 1 wherein said magnetic microspheres are of a size of from about 0.01 micron to about 1000 microns.

6. (Original) The process of claim 1 wherein said magnetic microspheres are of substantially the same dimensions.

7. (Original) The process of claim 1 wherein said magnetic microspheres include magnetic particles of a material selected from the group consisting of a ferromagnetic material and a superparamagnetic material.

8. (Original) The process of claim 6 wherein said magnetic particles are selected from the group consisting of iron-cobalt, iron-platinum, and samarium-cobalt.

9. (Original) The process of claim 7 wherein said magnetic microspheres include magnetic particles and a coating material of a material selected from the group consisting of an organic polymeric material and glass.

10. (Original) The process of claim 7 wherein said magnetic microspheres include magnetic particles and a coating material of polystyrene.

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11. (Original) The process of claim 1 wherein said receptor agents are selected from the group consisting of antigens, antibodies, peptides, proteins, nucleic acids, lipids, carbohydrates and enzymes.

12. (Previously presented) The process of claim 1 wherein said magnetic particles are coated with a material selected from the group consisting of an organic polymeric material and glass.

13. (Previously presented) The process of claim 1 wherein said magnetic particles are imbedded within a material selected from the group consisting of an organic polymeric material and glass.

14. (Previously presented) The process of claim 1 wherein said magnetic particles are immobilized on a surface of or within a material selected from the group consisting of an organic polymeric material and glass.

15. (Previously presented) The process of claim 1 further including the step of forming said magnetic microspheres including said magnetic particles, wherein forming said magnetic microspheres including said magnetic particles comprises:

coating said magnetic particles with a material having a first reactive functionality; and,

reacting said coated magnetic particles with non-magnetic microspheres having a second reactive functionality, wherein said second reactive functionality reacts with said first reactive functionality to form said magnetic microspheres including said magnetic particles.

16. (Original) The process of claim 15 wherein said first reactive functionality is selected from the group consisting of amines, carboxylates, epoxies and one of an affinity pair, and said second reactive functionality is different from said first reactive functionality and is selected from the group consisting of amines, carboxylates, epoxies, and the other of the affinity pair.

17-63. (Canceled)